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1. AGENCY USE ONLY (LEAVE BLANK)		2. REPORT DATE  14 March 1996	3. REPORT TYPE AND DATES COVERED  Professional Paper	
4. TITLE AND SUBTITLE  Flight Test Update - F/A-18E/F Super Hornet (Slides)			5. FUNDING NUMBERS	
6. AUTHOR(S)  LCDR T. C. Gurney and Jim Sandberg				
7. PERFORMING ORGANIZATION NAME(S) AND ADDRESS(ES)  Commander Naval Air Warfare Center Aircraft Division 22541 Millstone Road Patuxent River, Maryland 20670-5304			8. PERFORMING ORGANIZATION REPORT NUMBER	
9. SPONSORING/MONITORING AGENCY NAME(S) AND ADDRESS(ES)  Naval Air Systems Command Department of the Navy 1421 Jefferson Davis Highway Arlington, VA 22243			10. SPONSORING/MONITORING AGENCY REPORT NUMBER	
11. SUPPLEMENTARY NOTES				
12a. DISTRIBUTION/AVAILABILITY STATEMENT  Approved for public release; distribution unlimited.			12b. DISTRIBUTION CODE	
13. ABSTRACT (Maximum 200 words)  This presentation shows a background of the F/A-18 Super Hornet. Some background information includes: Program history, aircraft description, flight test program and the lessons noted.				
14. SUBJECT TERMS  F/A-18E/F, Super Hornet, Integrated Test Team			15. NUMBER OF PAGES 37	
			16. PRICE CODE	
17. SECURITY CLASSIFICATION OF REPORT  UNCLASSIFIED	18. SECURITY CLASSIFICATION OF THIS PAGE  UNCLASSIFIED	19. SECURITY CLASSIFICATION OF ABSTRACT  N/A	20. LIMITATION OF ABSTRACT  N/A	

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NSN 7540-01-280-5500

Standard Form 298 (Rev. 2-89)  
Prescribed by ANSI Std. Z39-18

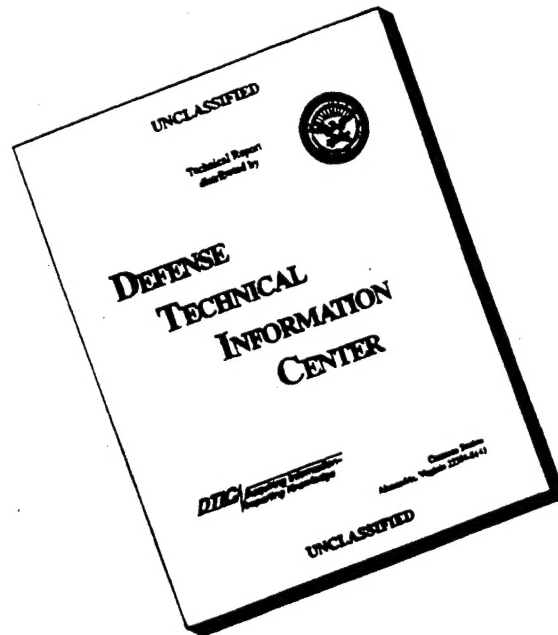
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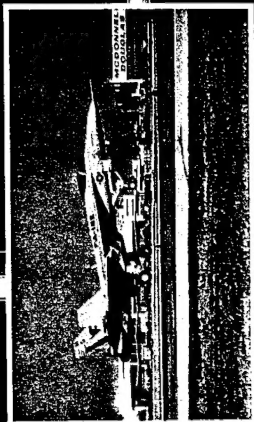




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# Flight Test Update

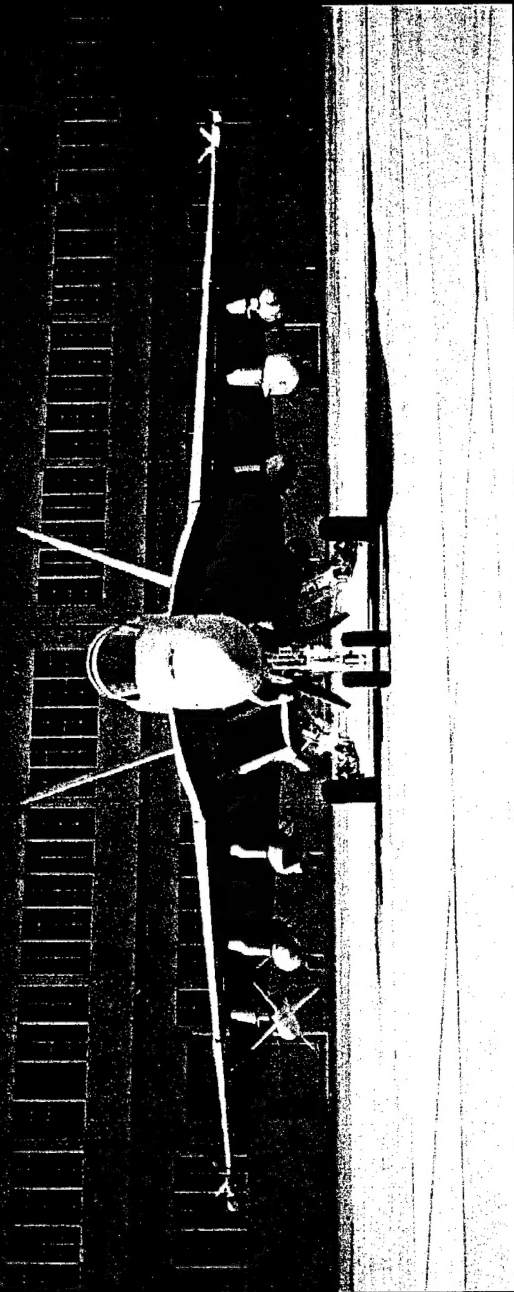


F/A-18E/F  
*Super*  
**Hornet**



# **The Society of Experimental Test Pilots**

## **26th San Diego Symposium March, 1996**



**Mr. Jim Sandberg, NGC (AF)  
LCDR Tom Gurney, USN (M)**



- Program History
- Aircraft Description
- Flight Test Program
- Lessons Noted

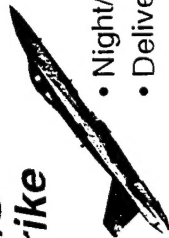
# Continues Hornet Evolution

## Additional Improvements



- APG-73 Radar Upgrade
- Engine Upgrade
- Reconnaissance

### F/A-18C/D Night Strike



- Night/Adverse Weather Capability
- Deliveries Began October 1989

### F/A-18C/D



- Advanced Weapons
- Improved Systems
- Fleet Deliveries September 1987

### F/A-18A/B

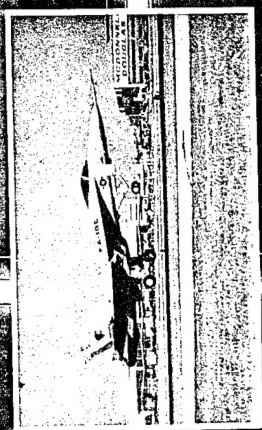
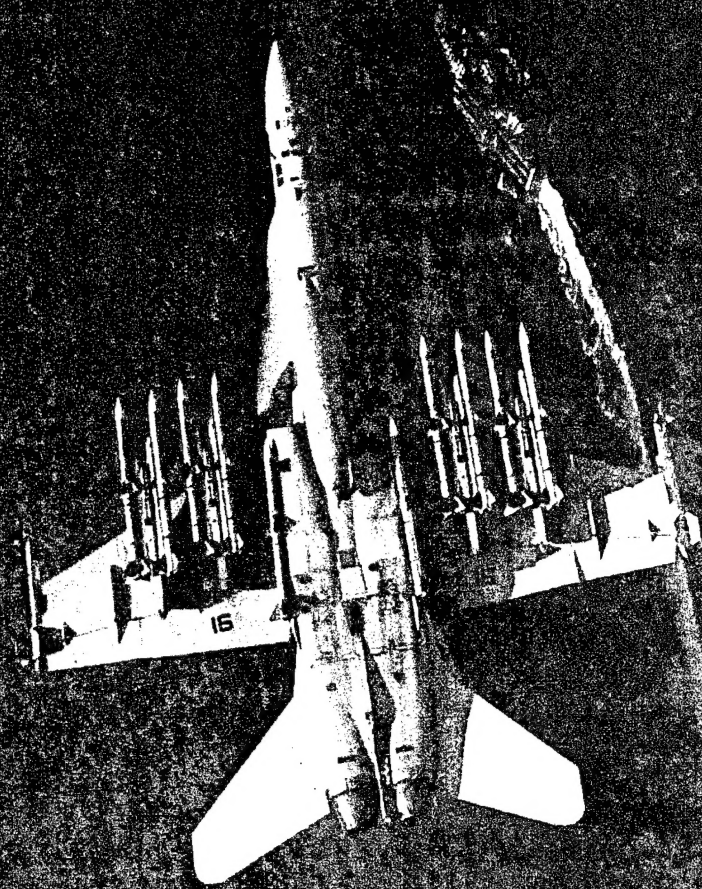


- Replaced A-7 and F-4
- First Flight November 1978



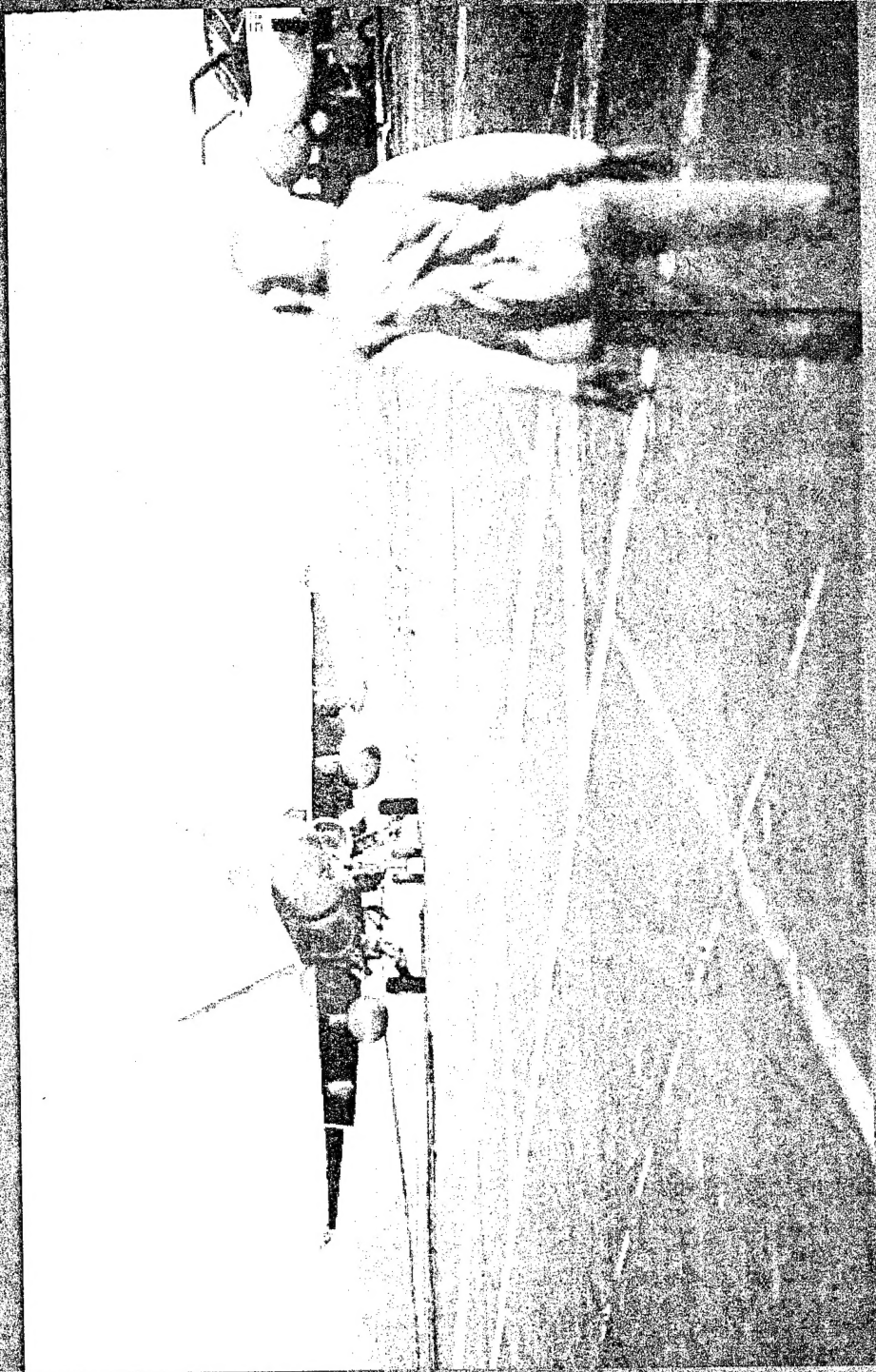


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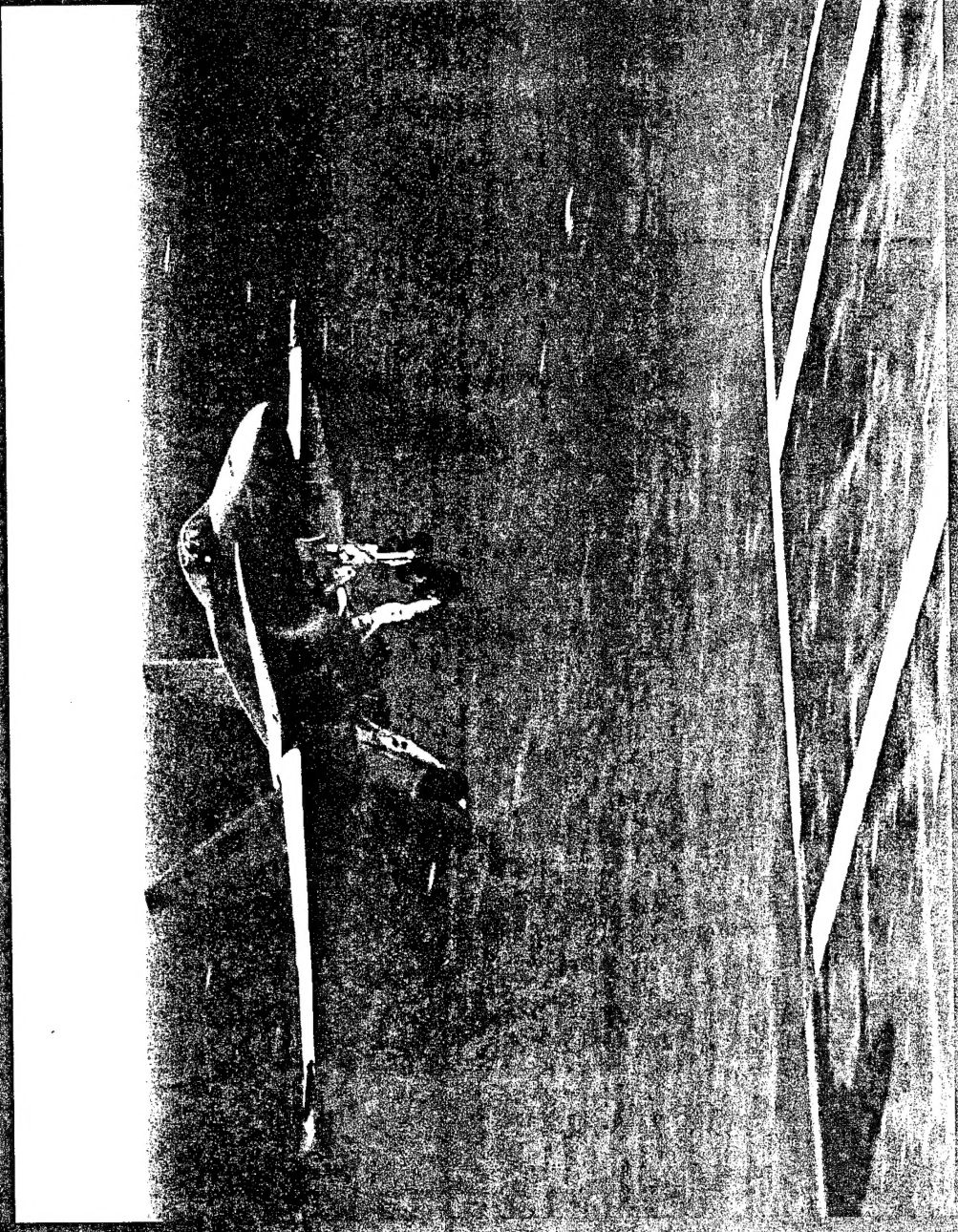


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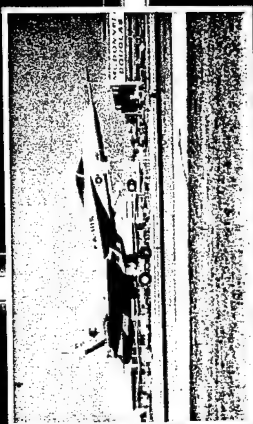
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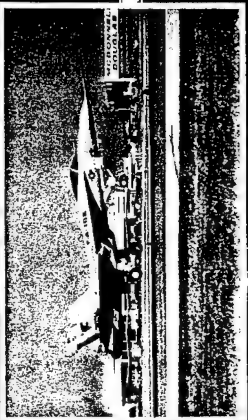
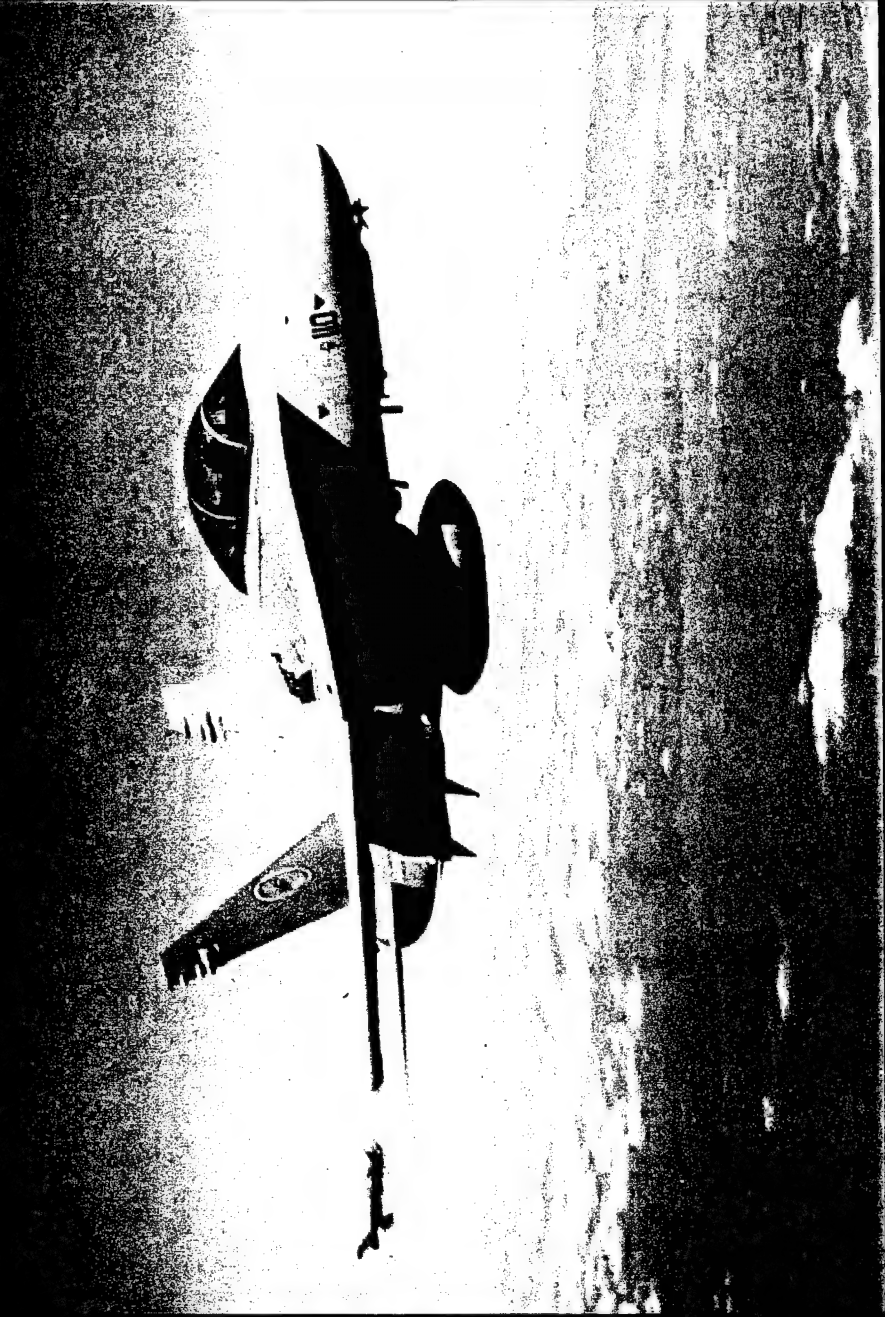


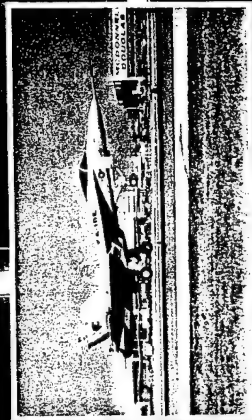


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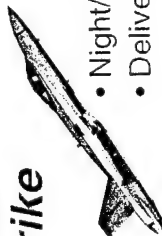
# Continues Hornet Evolution

## *Additional Improvements*



- APG-73 Radar Upgrade
- Engine Upgrade
- Reconnaissance

### **F/A-18C/D Night Strike**



- Night/Adverse Weather Capability
- Deliveries Began October 1989

### **F/A-18C/D**



- Advanced Weapons
- Improved Systems
- Fleet Deliveries September 1987

### **F/A-18A/B**



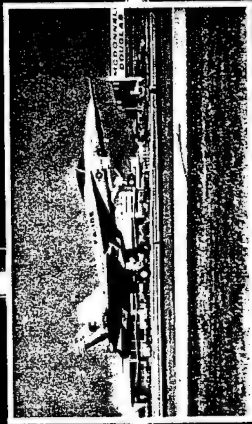
- Replaced A-7 and F-4
- First Flight November 1978

### **F/A-18E/F**



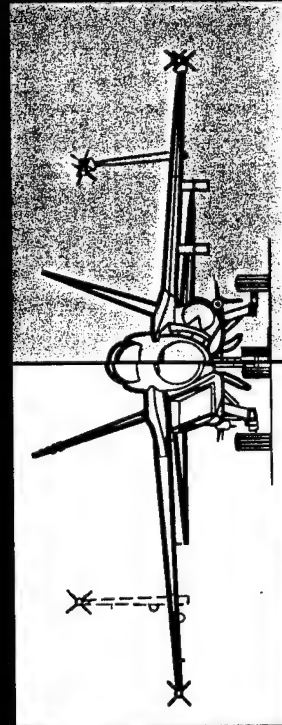
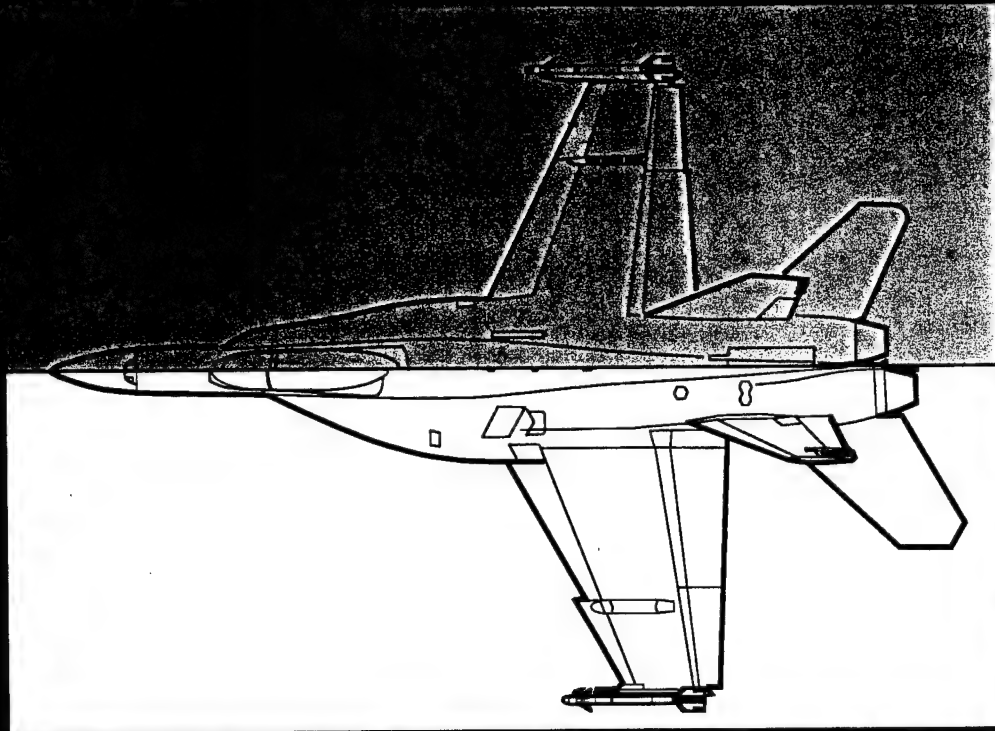
- Longer Range
- Payload Flexibility
- Increased Payload Recovery
- Improved Survivability
- Growth Margin

***Maintaining Outstanding Carrier Suitability and Growth Potential***

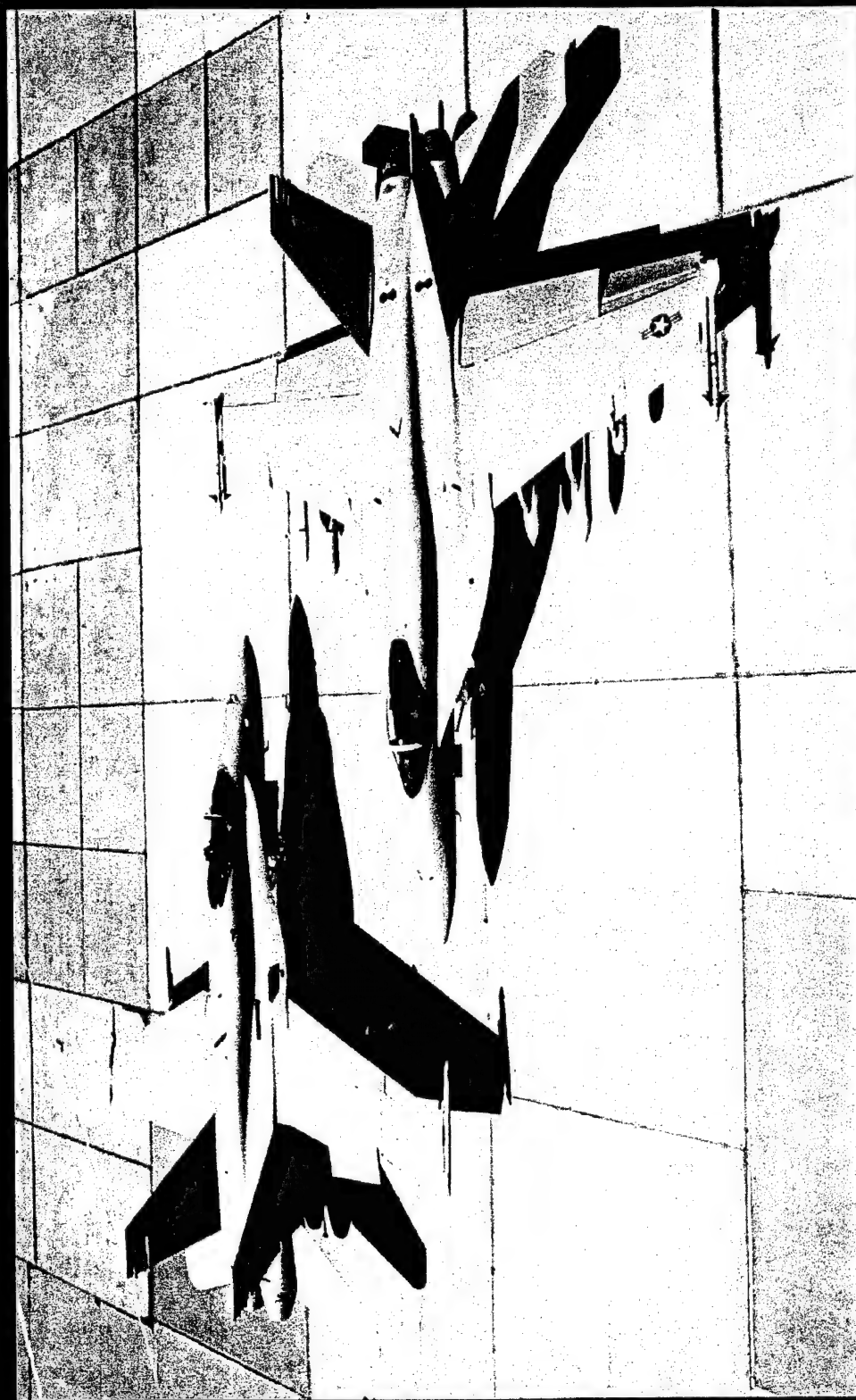


# F/A-18E Characteristics

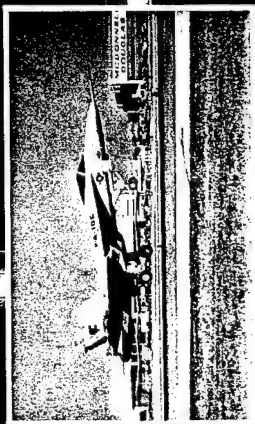
	F/A-18E	F/A-18C
Wing Area	500 sq ft	400 sq ft
Weight		
Empty	30,564 lb	23,332 lb
Max TOGW	66,000 lb	57,900 lb
Takeoff (Fighter Escort)	47,874 lb	37,792 lb
Carrier Landing	42,900 lb	33,000 lb
Propulsion		
(2) F404 Derivative Turbos	F414	F404
Engine	44,000 lb	32,000 lb
Total Thrust Class (SLSU)		
Fuel (JP-5)		
Internal	14,460 lb	10,860 lb
External		
330 gal. Tanks	6,730 lb	6,730 lb
480 gal. Tanks	9,790 lb	
Design Load Factor (USN)	7.5 g	7.5 g



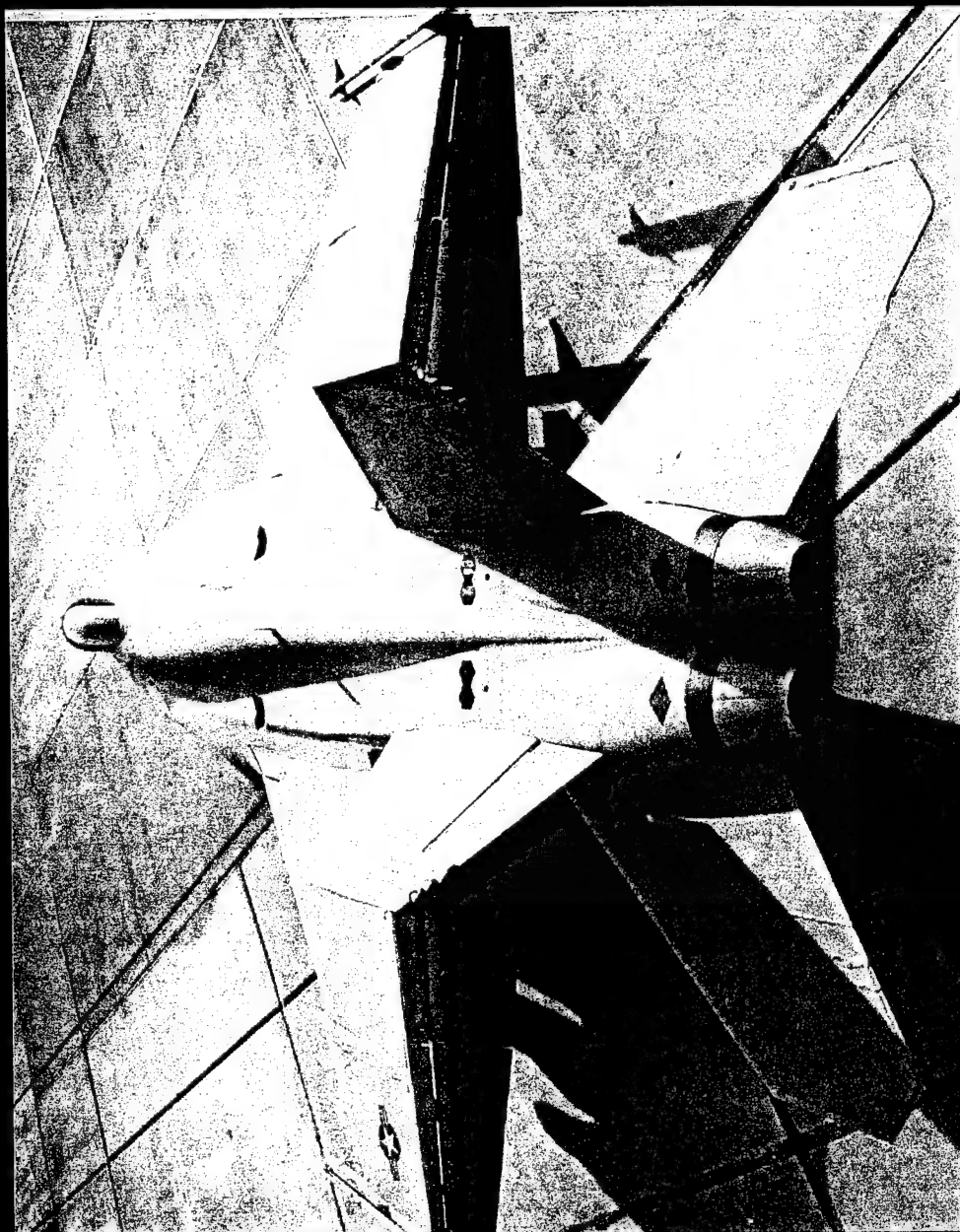
# C - E Comparison

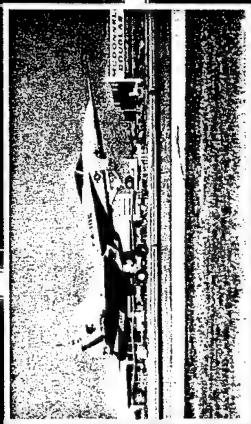


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# F/A-18E/F Features

Additional 3,600(E)/3,385(F) lb Internal Fuel

Dual Pressure Hydraulics

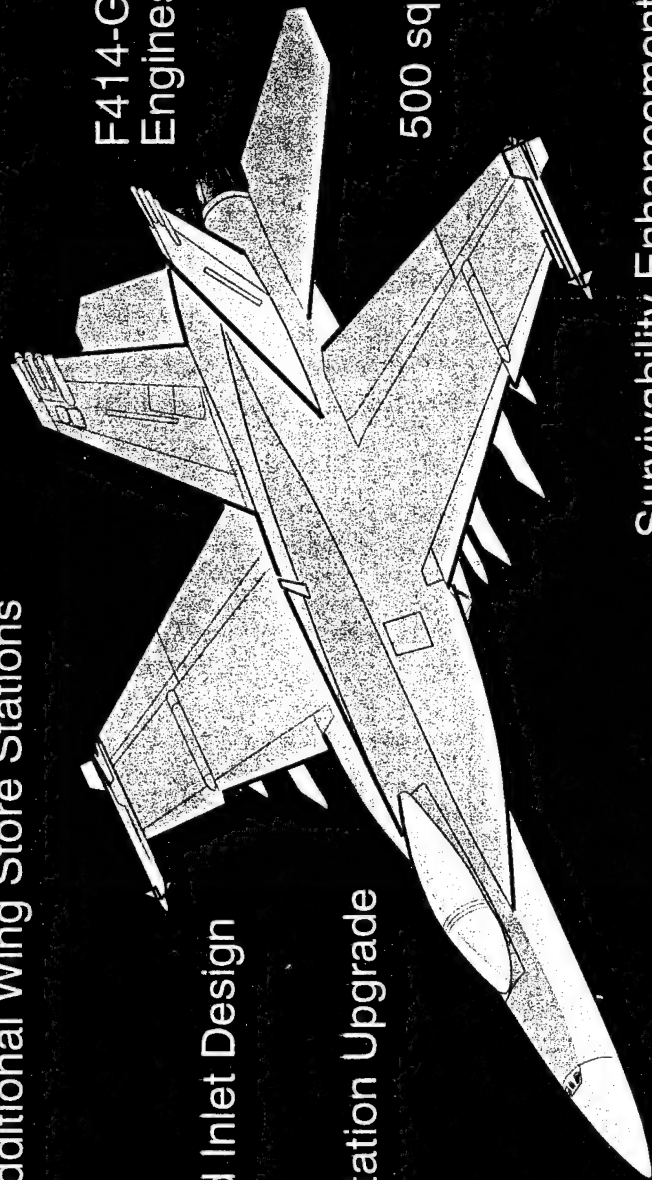
Two Additional Wing Store Stations

F414-GE-400  
Engines

Improved Inlet Design

Crew Station Upgrade

500 sq ft Wing

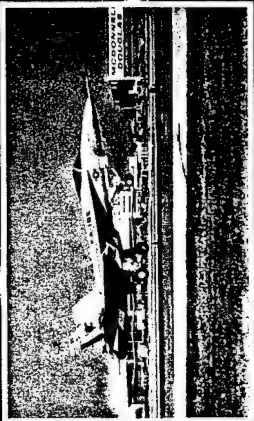


Survivability Enhancements

Aerial Refueling Store Compatibility

Increased Composite Usage for Fuselage Skins

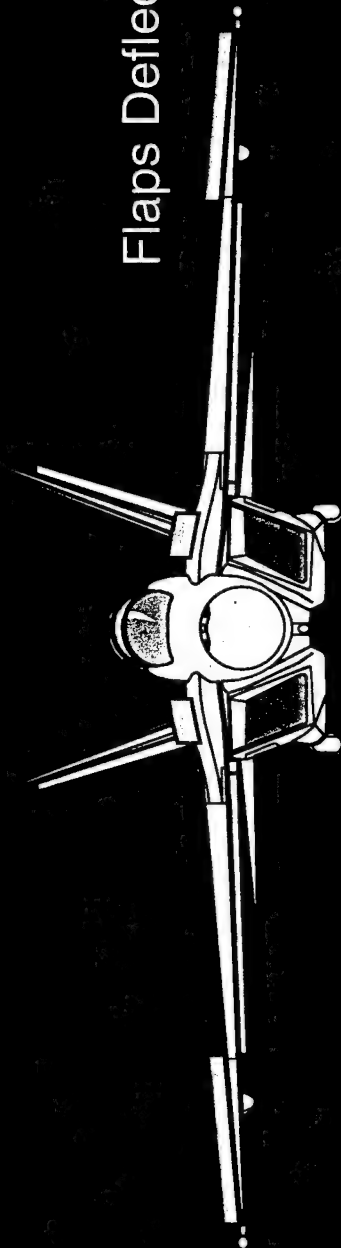
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# Alternate Speedbrake Mechanization

Primary Flight Controls Deflect

LEX Spoilers Deflect

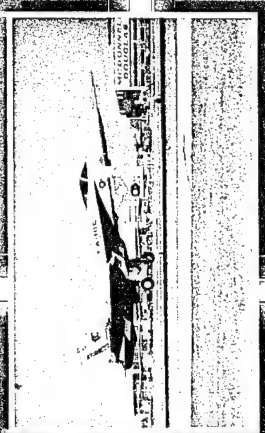
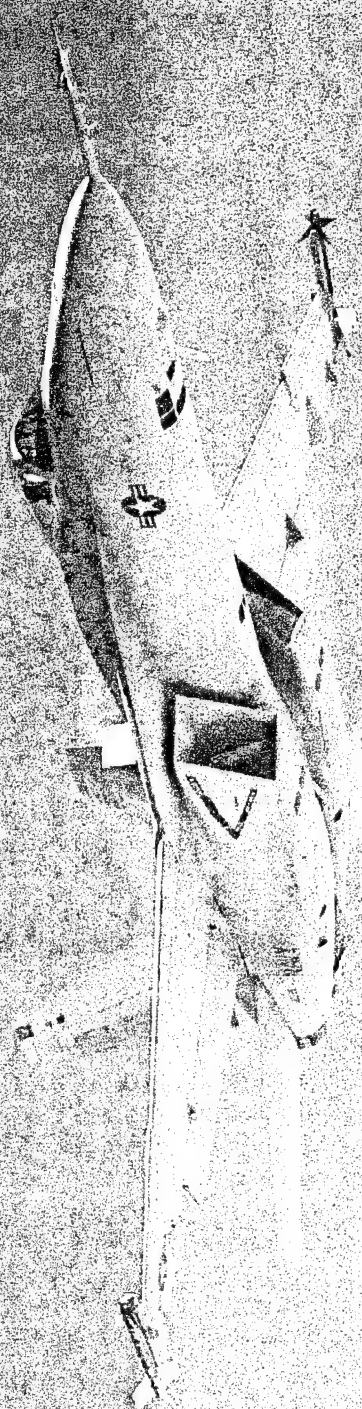


Flaps Deflect

Mechanization Provides Roll and Yaw Command Priority Logic



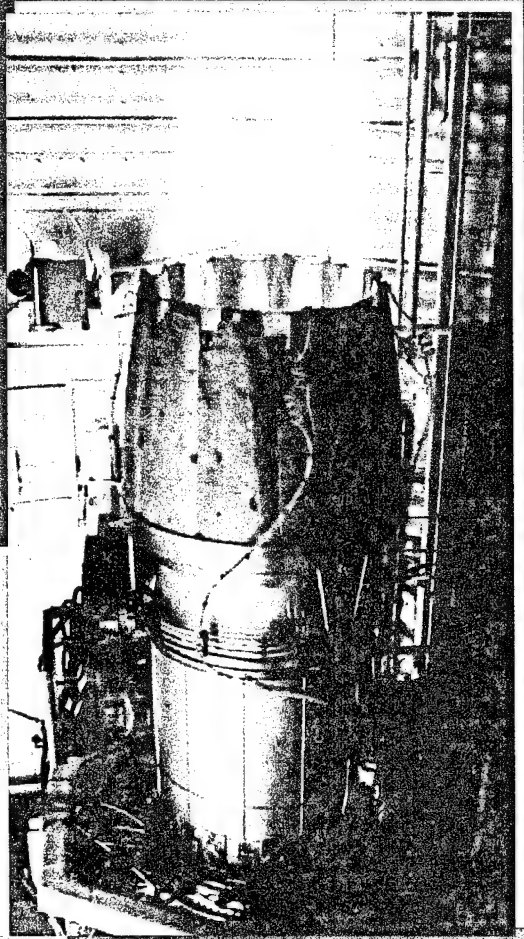
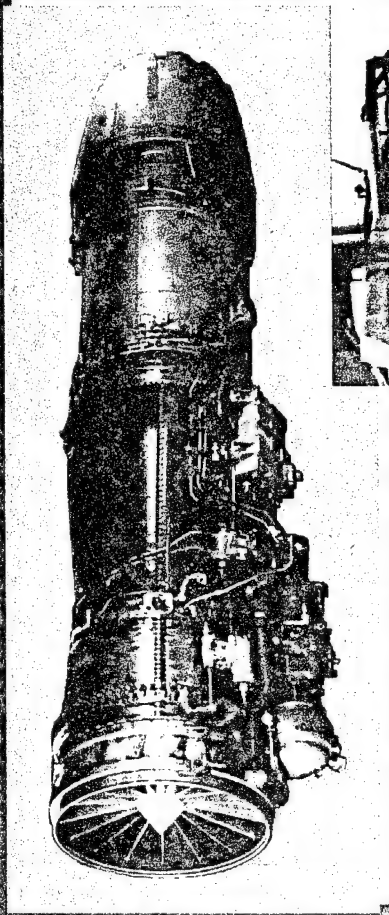
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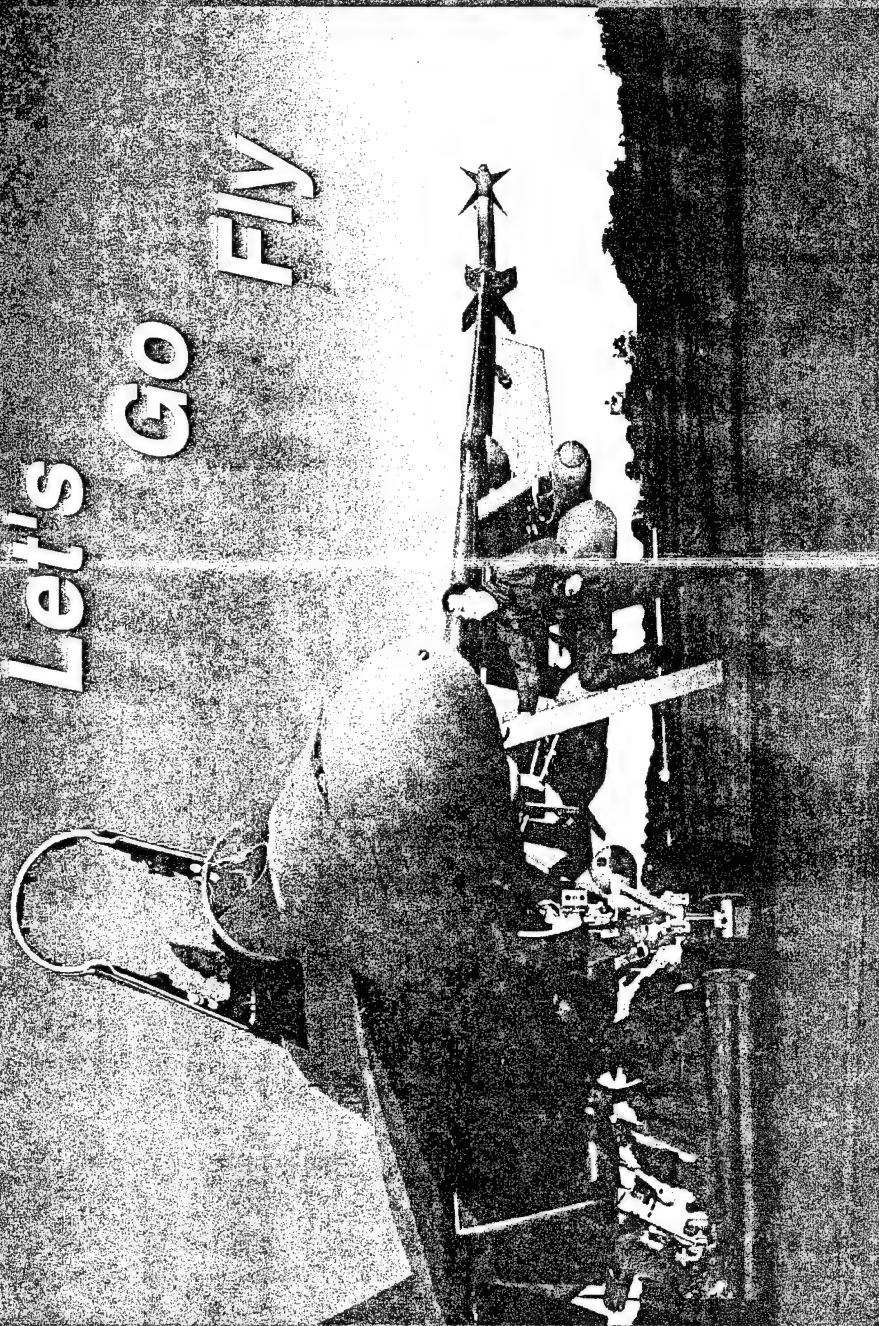
# F414-GE-400 Turbofan Engine



GE68-0019-75



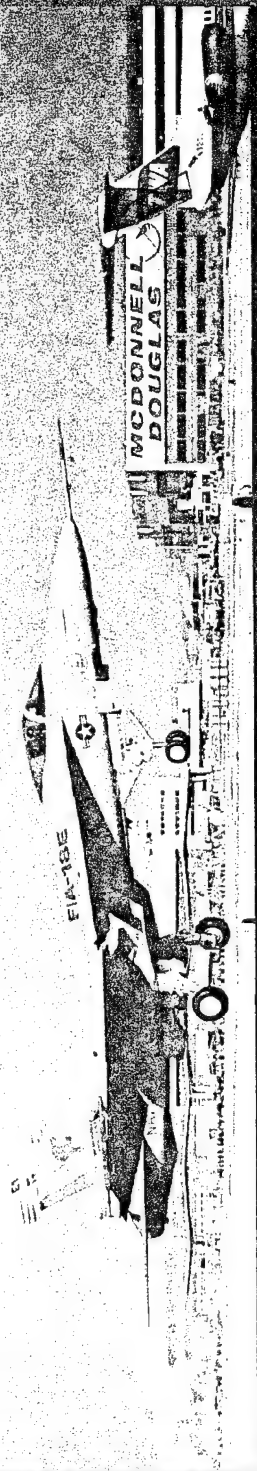
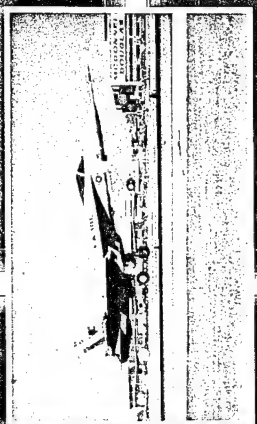
# Let's Go FLY



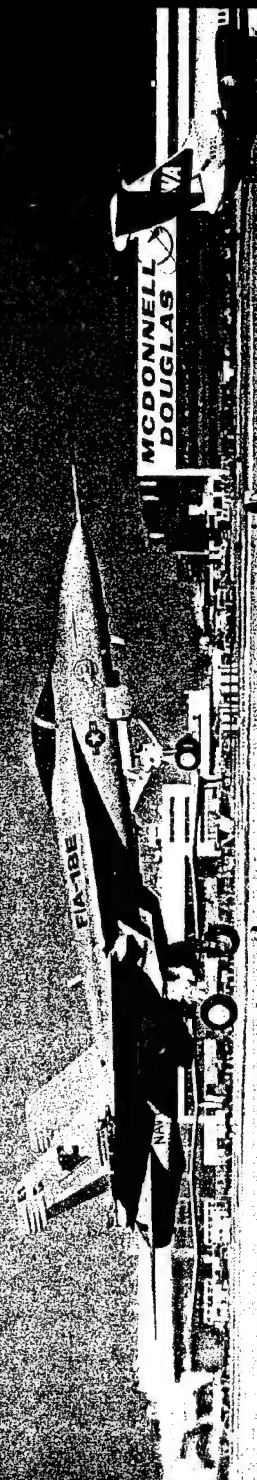
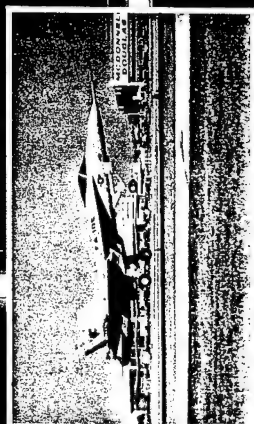
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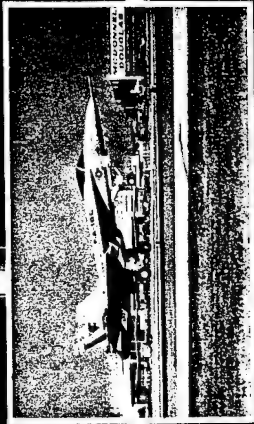




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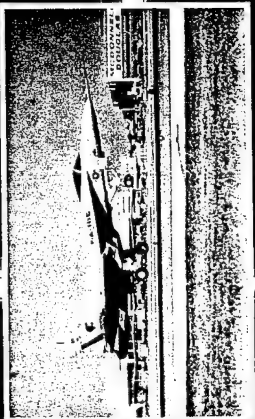
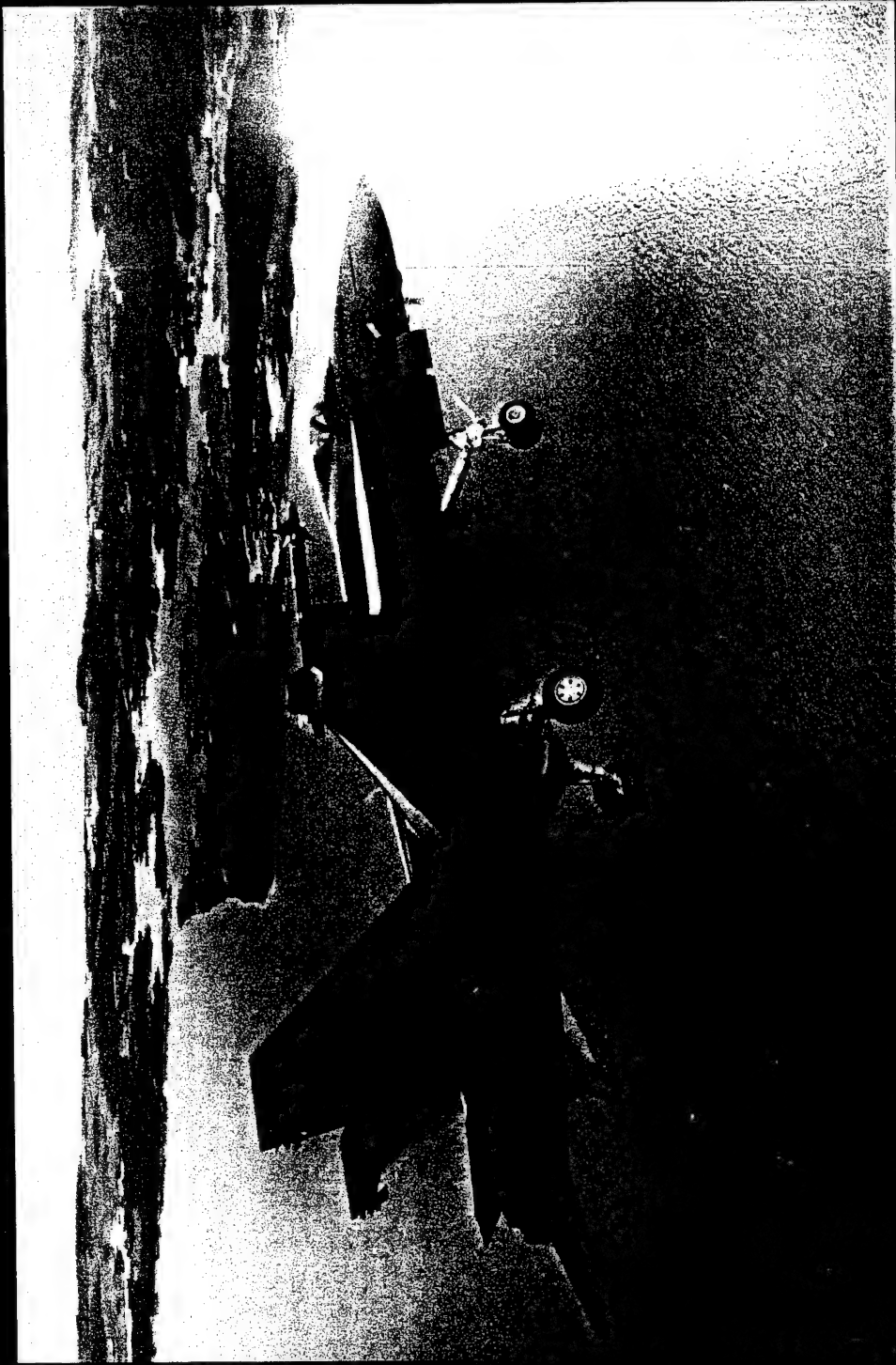


## E/F Flight Test Status (3/1/96)

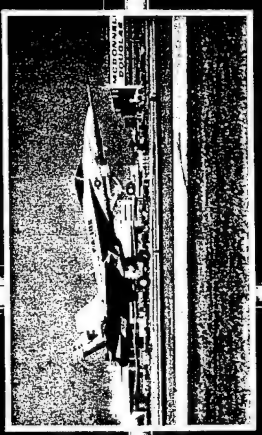
- E-1 6 Flights 8.8 hr
- E-2 6 Flights 9.0 hr
- Both Aircraft @ Pax – Ready to Test
  - E-1 Air Data/Envelope Expansion
  - E-2 FQ/Propulsion/IFR



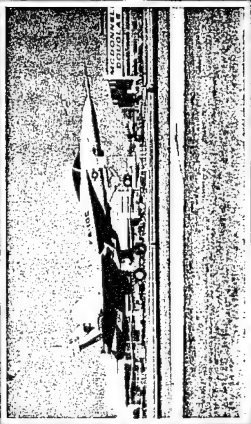
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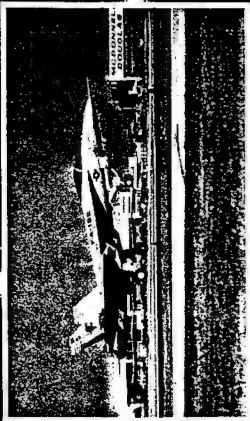




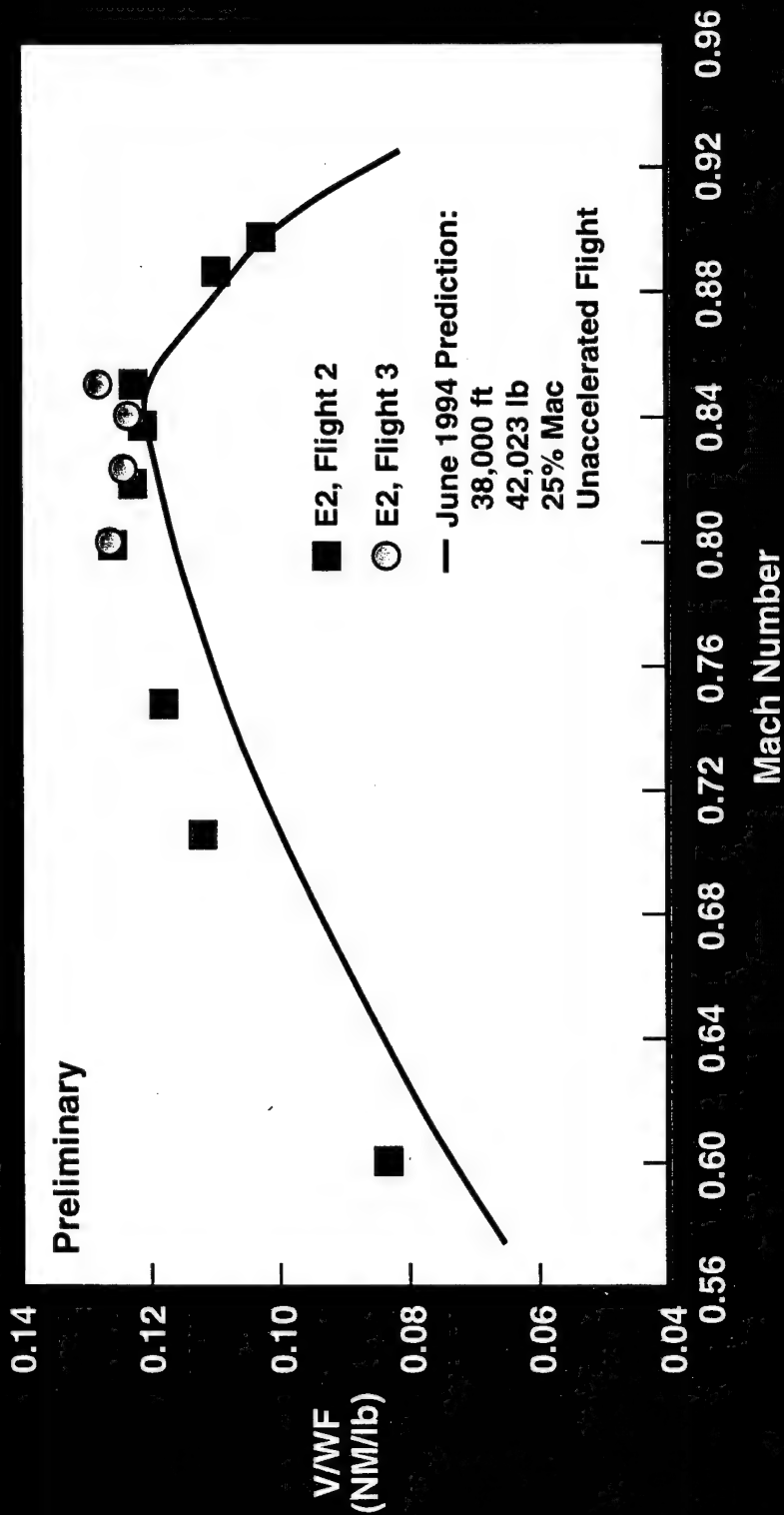


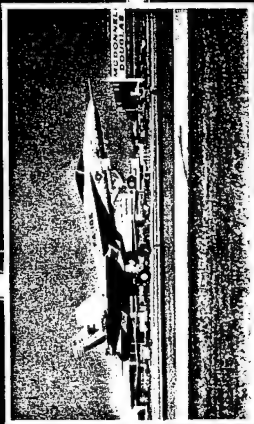
## So, How Does It Fly?

- Handling Qualities
  - Up and Away
  - Landing
  - No Major FCS Design Issues
- Engine
  - Precise Control
- Performance
  - "Data On the Line or Above"  
Longer Test Missions

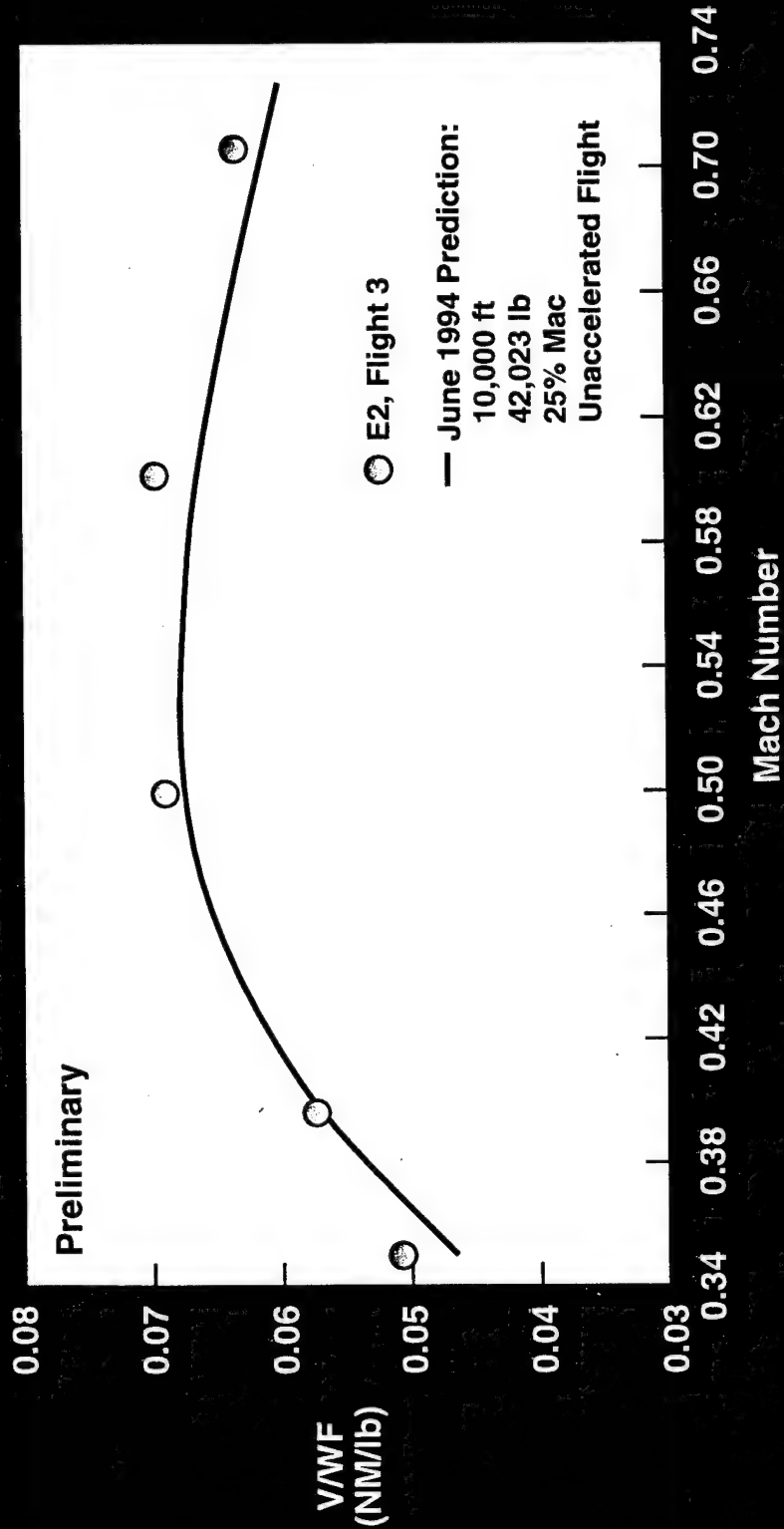


# Raw Uncorrected EOA Cruise Specific Range @ W/Delta = 206,238 (2) AIM-9 Configuration

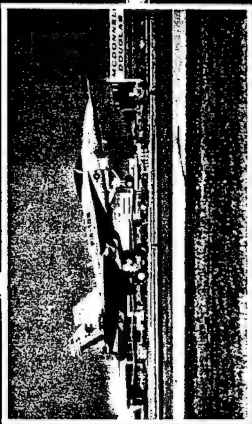




# Raw Uncorrected EOA Cruise Specific Range @ W/Delta = 61,107 (2) AIM-9 Configuration

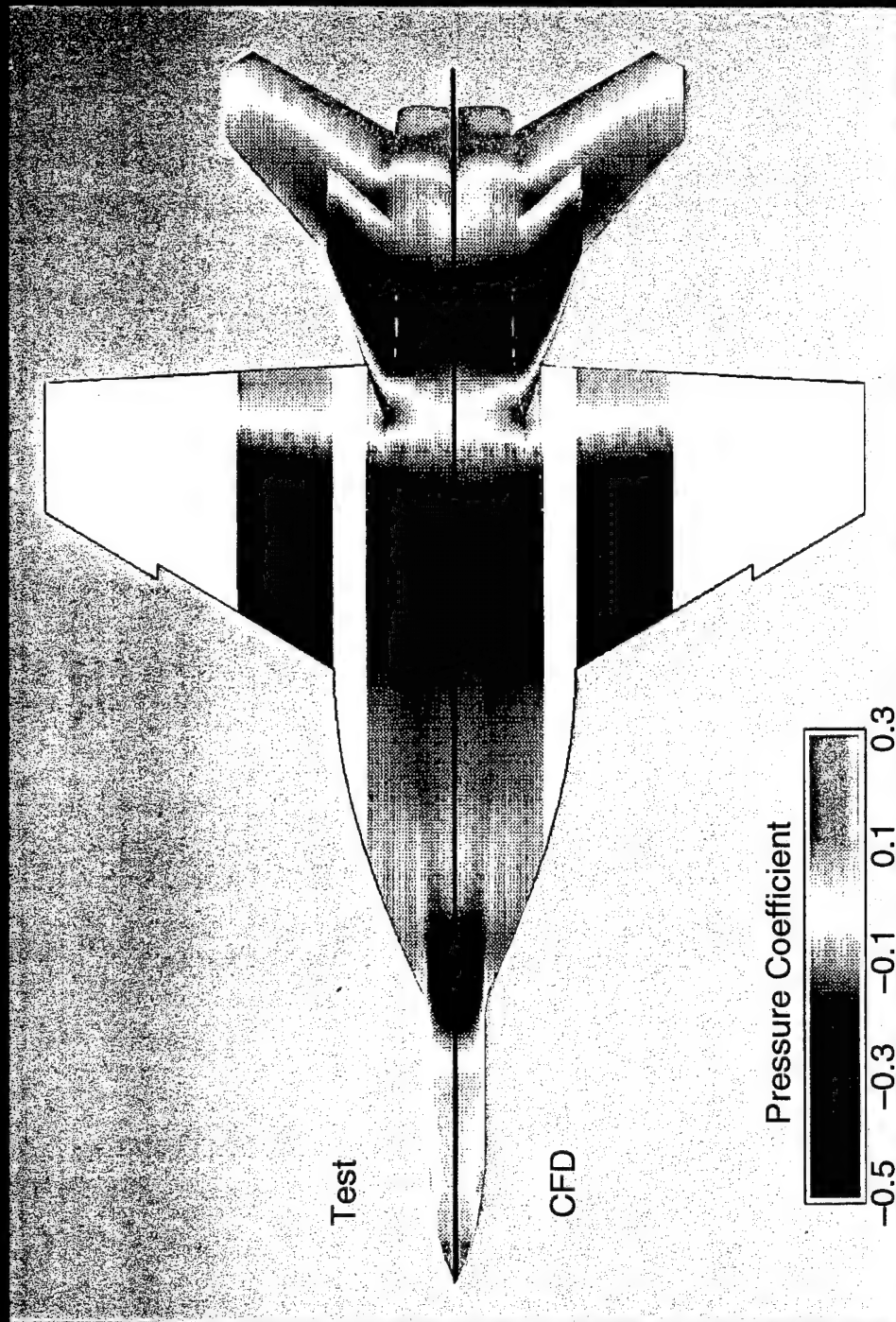






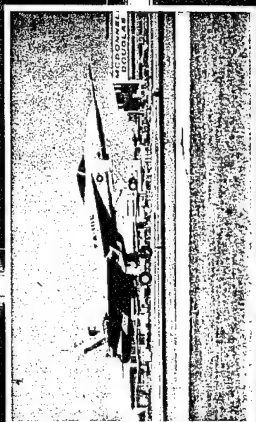
# Test Data Validates CFD

F/A-18E Sting and Distortion/Jet Effects Model  
Mach 0.85,  $\alpha = 3.5^\circ$





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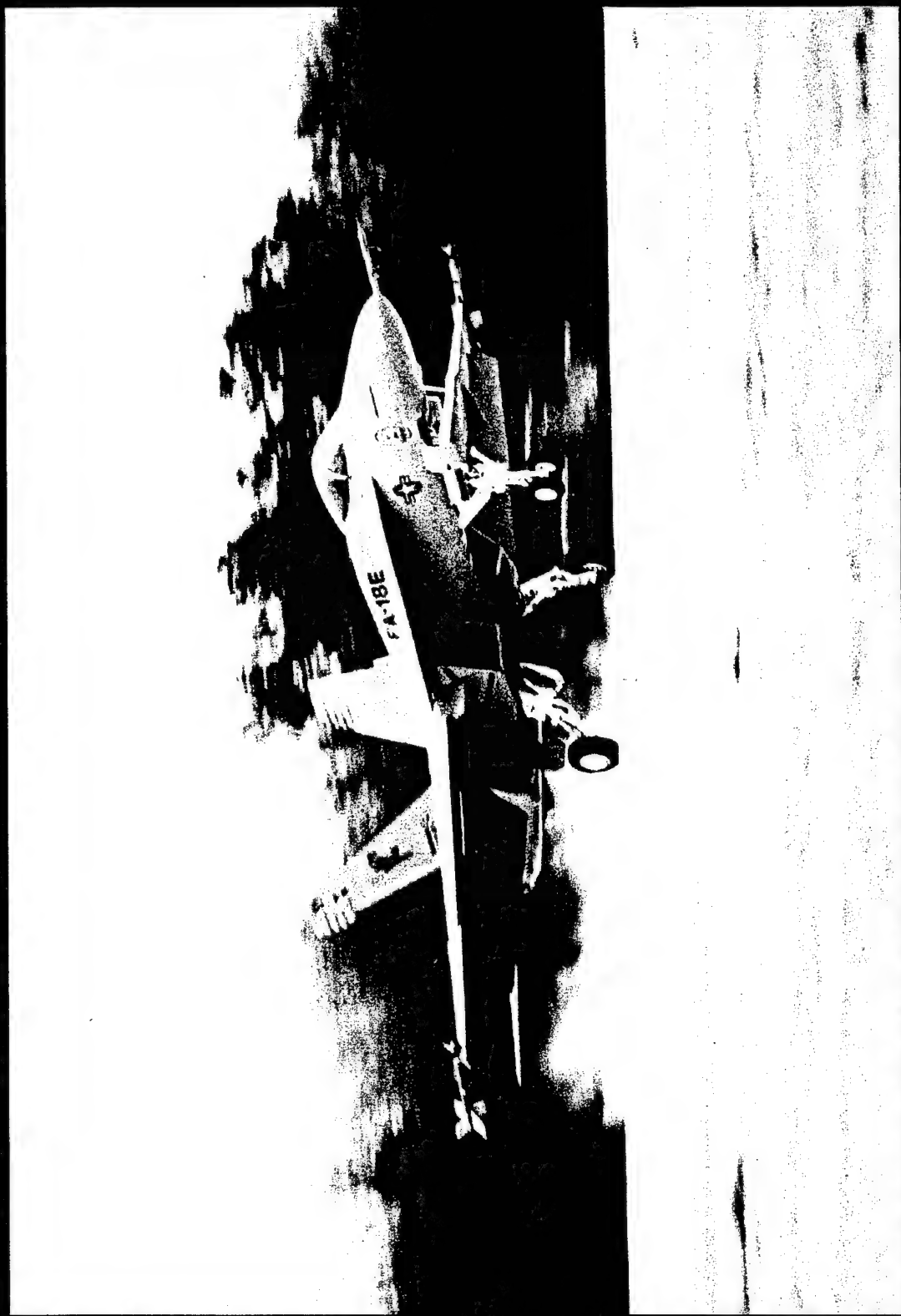




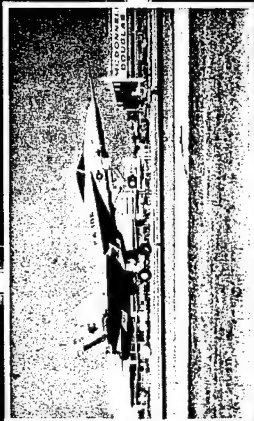


# Comparisons

Landing	42,000 lb GW 133 KIAS App SPD	35,000 lb GW 146 KIAS App SPD
Climb	Mid Power Climb	Afterburner Required
High Altitude Maneuvering	Buffer Free	In Buffer



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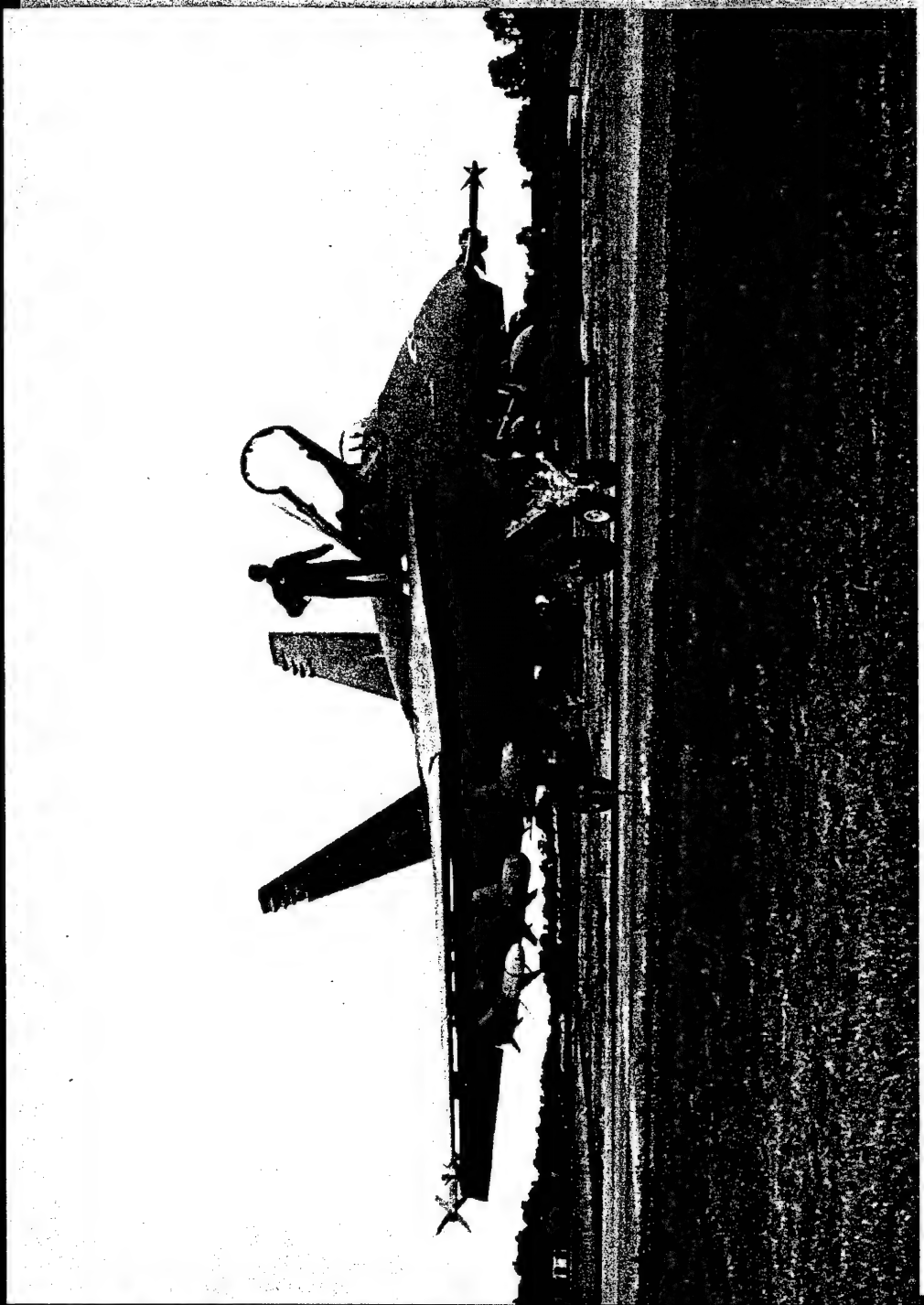


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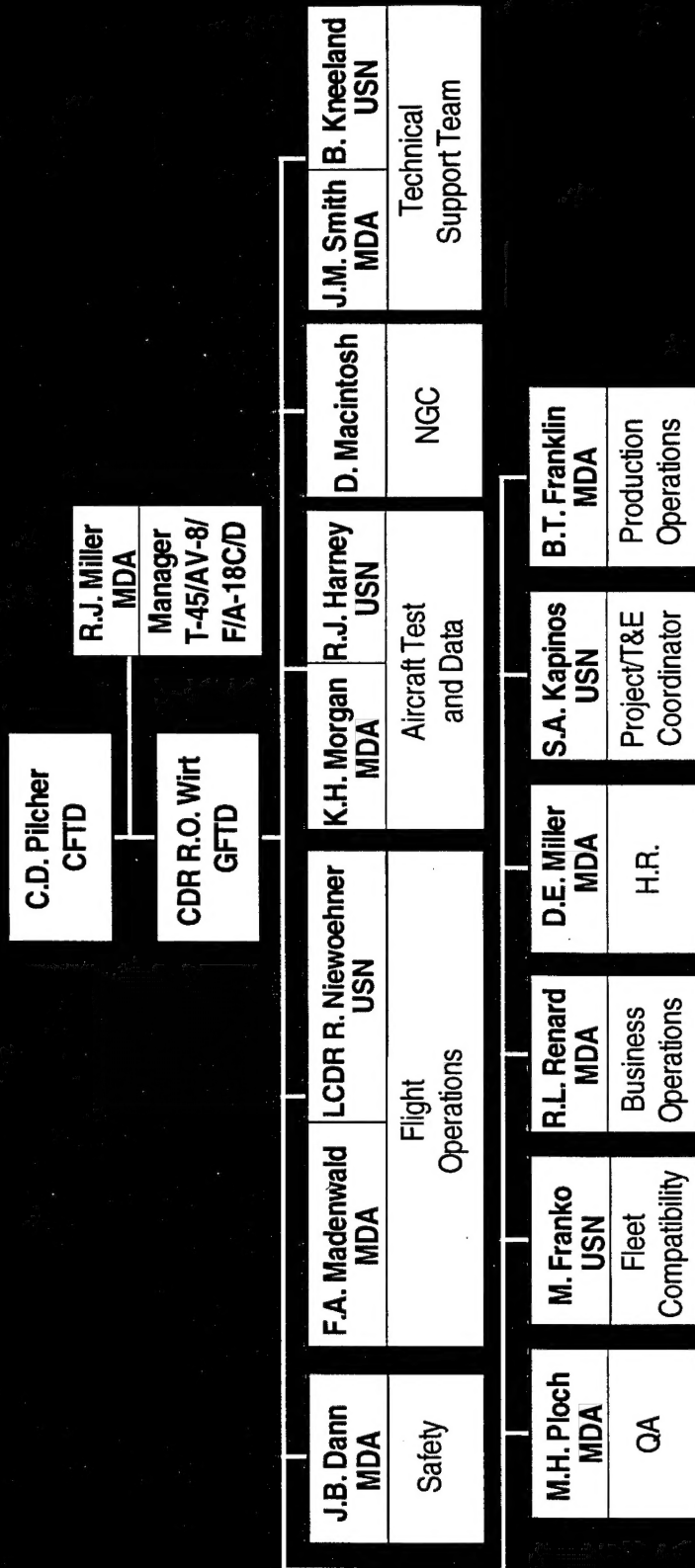
# Integrated Test Team



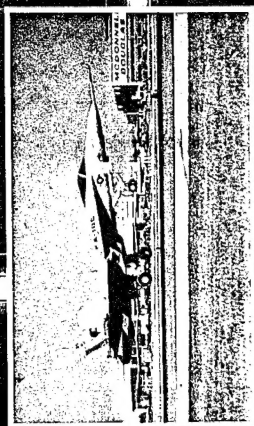
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# F/A-18E/F Flight Test Integrated Test Team Organization



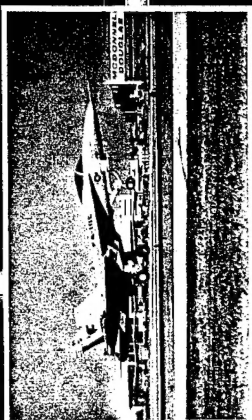
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